

Comparison of Mail and Telephone Methods To Collect Program Evaluation Data

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EVALUATION of health programs often requires data on the knowledge, attitudes, and behavior of the target population groups. It is frequently assumed that adequate data of this type can only be obtained by means of face-to-face interviews. Since the personal interview method can be relatively complex, expensive, and time-consuming (1), the assumption that other methods should not be used may deter health administrators from undertaking needed evaluation.

This study deals with two other methods of data collection—interviews conducted over the telephone and self-administered mail questionnaires. These methods have certain advantages. Their cost per completed interview is much lower than that of the face-to-face interview. The telephone interview is the quickest of all survey techniques. Moreover, one traditional disadvantage of the telephone interview—the fact that telephone subscribers are not representative of the general population—is of decreasing importance as the percentage of households with telephones continues to rise.

Purposes of the Study

We compared telephone interviews and mail questionnaires as they might be used to help in evaluating one part of a school health program. The two methods were used to gather data on parental knowledge, attitudes, and behavior. The methods were then compared with regard to nonresponse rate, cost, and content of responses.

The essential questions concerned the extent that the two data-gathering methods differed in terms of nonresponse rate, cost, and content of responses; whether there were differences of practical significance to an administrator engaged in program evaluation or could the two methods be treated as roughly equivalent; and whether the administrator could consider either or both methods as adequate alternatives to the personal interview.

Method

A school health program in a medium-sized midwestern community was the vehicle for evaluating the two methods. The study population consisted of mothers of fourth graders and mothers of eighth graders in three public schools. Mothers of all fourth graders in these schools were included; half the mothers of the larger eighth-grade population were selected by taking alternate names from an alphabetical list of all eighth-grade children. After mothers who had supplied no phone number for school

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records were eliminated, the study sample consisted of 152 mothers of fourth graders and 117 mothers of eighth graders. The total sample was then randomly assigned to two groups; mothers in one group were mailed a questionnaire, and mothers in the other group were interviewed over the telephone. The questions for mothers of fourth graders differed only in a few necessary but insignificant respects from those for mothers of eighth graders. In each grade category the question content, wording, and sequence were essentially the same for both the mail questionnaire and the telephone interview schedule, except for minor differences in format made necessary by the methods. A short mimeographed letter containing a brief description of the study was mailed to all mothers in the telephone sample before they were called.

Because of the random assignment of mothers to telephone and mail categories, there was no reason to believe that the two groups would differ significantly in terms of various demographic characteristics. However, to provide a check certain information was obtained from school records on the age, education, and occupation of both parents. Additional information on family size and length of time in the community was obtained during the interview. Comparison of the groups with reference to these characteristics showed no significant differences.

In addition, the telephone and mail groups were compared with the group of 16 mothers who had been eliminated from the sample because they gave no telephone numbers. On the basis of information from school records, no significant differences were observed.

Both the telephone and mail groups were unusually high in terms of social position calculated according to the Hollingshead index (2) and the mother's educational level. Almost one-third of both groups fell into the highest social category, and less than 10 percent into the lowest. More than 40 percent of the mothers had had at least some college, and only about 10 percent were not high school graduates. These findings were not unexpected since the community was atypical. For this reason, the results of this study can be generalized only with extreme caution.

The questions administered to the two groups

of mothers were designed to elicit opinions about the existing school health program and about what might constitute an ideal program, information about parental knowledge of the services and activities of the school health program, and reports on contacts with school personnel and services. Contacts included reports on screening tests given the child, parent conferences with the school nurse, and health material presented to the child in the classroom.

Findings

Nonresponse rates. Ten of 151 (6.6 percent) mothers in the telephone group and 22 of 118 (18.6 percent) in the mail questionnaire group did not respond. In the telephone group seven mothers were never reached, one refused to participate in the study, and two did not provide complete interviews. One of these two appeared to be emotionally disturbed; the other was new to the community and had insufficient information to answer many of the questions.

Thus, the main problem with the telephone interviews was the inability of interviewers to reach seven mothers. Telephone contact was made on the first attempt with a little more than half of the sample. After two attempts, 76 percent of the mothers had been contacted. A third attempt raised the overall contact rate to 86 percent. It was necessary to call back after working hours to reach 21 mothers. In a few instances as many as 8 calls were made, but the average was 2.1 calls per contact.

We can only speculate as to the reasons for nonresponse among mothers receiving mailed questionnaires. About 58 percent of the questionnaires were returned in response to the original mailing. After 2 weeks a reminder was sent to all nonrespondents, along with a second copy of the questionnaire. This lowered the nonresponse rate to 18.6 percent. A few questionnaires were remailed when the original addresses turned out to be incorrect. Thus we assume that questionnaires were received by all the mothers, and the nonresponse rate was mainly due to refusals.

The fact that both nonresponse rates were low as compared with rates in other studies may be partly because the study was performed in a community where higher education has considerable prestige among the general popula-

tion. Another factor is the content of the interview—the health of children—which is of considerable interest to mothers. An administrator planning to use telephone or mail interview methods will probably obtain higher non-response rates in more typical situations.

Cost. The essential cost difference between the telephone interview and mail questionnaire was found by comparing the printing and mailing expenses of the mail questionnaire with the time required for the telephone interviews. Time devoted to training interviewers would have also to be included. Other expenses—for example, writing a questionnaire or analyzing the data—would be the same for both data-gathering methods.

In this study, printing and mailing expenses came to about \$75. This sum compared to a total of about 45 hours interviewing time, including time spent trying to reach the respondents. The cost of these 45 hours of interviewing, at least \$275 or \$1.95 per interview, was relatively high because all interviewing was done by professional staff and because the interviews were comparatively lengthy (average length, 15 minutes). Little or no time was necessary for interviewer training, and the cost of the telephone calls themselves was relatively inconsequential.

Telephone interviews are not always more costly than mail questionnaires. Health departments might find it possible to train staff members to do telephone interviewing as needed. Costs beyond the nominal expense of the telephone calls themselves would thus be eliminated.

Content of responses. Telephone and mail responses were compared as to absolute size of the differences between them. Each response category was considered as a separate comparison. Some questions were answered either “yes” or “no,” thus providing only two response categories. A number of the questions were open ended, creating as many as five or six response categories for a single question. The results of this comparison show that more than 75 percent of the differences were of less than 10 percentage points, and more than 85 percent were less than 15 percentage points (table 1).

The response distributions were also examined to determine the number of statistically significant differences. A total of 122 compari-

sons were made, using a 0.05 level of significance and a two-tailed test. Sixteen differences, about 13 percent of the total number of comparisons, were found to be statistically significant.

The question items showing statistically significant differences between mail and telephone responses follow.

Significantly different responses from parents of 4th graders and parents of 8th graders

In addition to things already discussed, does the school do anything else for the health of children?

Has the PTA done anything to help the schools with the health program?

Should the schools teach health to the children?

Would you like to see any changes in the local school health program?

Significantly different responses from parents of 4th graders

If a school finds that a child has a health problem, what should the school do about it?

At the time your child first entered school in this community, did someone in the school advise you that he/she should be examined by a doctor?

Have you ever had a conference with a teacher about your child's health?

Has your child ever had a hearing test in school?

Significantly different responses from parents of 8th graders

Did the school require (a pre-7th grade doctor's examination) or was it only a recommendation?

Is (the nurse in the school) full time or part time?

What was the (written health material sent home) about?

Responses to the various question items in this study cannot be considered as comparisons independent of each other. In practice, if not in theory, it would be impossible to calculate the influence of this lack of independence and so determine how many statistically significant differences would occur purely by chance. Therefore, the fact that 13 percent of the comparisons provided statistically significant differences cannot be interpreted with complete confidence. Some of these may reflect real differences; some may reflect merely chance differences.

Patterns of responses. Another comparison sought consistency or pattern in the differences between telephone and mail responses. Differences of greatest magnitude (15 percentage points or more) were examined to see whether they occurred consistently with any particular

Table 1. Size of differences between responses to comparable mail and telephone questions to mothers

Percentage differences (mail to telephone)	Mothers of 4th graders		Mothers of 8th graders	
	Number of comparisons	Cumulative percent	Number of comparisons	Cumulative percent
Less than 1.....	31	19.6	26	16.5
1-2.9.....	42	46.2	45	44.9
3.0-4.9.....	26	62.7	17	55.7
5.0-9.9.....	27	79.7	32	75.9
10.0-14.9.....	16	89.9	17	86.7
15.0-19.9.....	3	91.8	10	93.6
20.0-24.9.....	8	96.8	2	94.9
25 or more.....	5	100.0	9	100.0
Total items.....	1 158	-----	1 158	-----
Mean difference.....	-----	6.3	-----	6.5

¹ The number of comparisons exceeds the number of questions because each response was treated as a separate item.

topics or types of questions. Findings were negative.

A number of factual questions were examined to determine whether the data-collection methods differed in terms of the validity of obtained responses. The concept of "validity" is some-

what complicated here. If a mother is asked whether her child has ever had his eyes tested in school, validity in one sense refers to the objectively correct answer. Because the school system does periodically test vision, an objectively correct answer would be "yes." But not all parents are aware that their children have had vision testing. If the parent truly believes that his child has not had an eye test in school, even though this is an incorrect belief, the subjectively correct answer is "no."

To compare the methods in terms of the percentage of objectively correct answers obtained, six factual questions were examined. Telephone interviews produced a higher percentage of objectively correct responses slightly more often than did mail questionnaires. The differences went up to 26.5 percent (table 2). All but three differences, however, were smaller than 10 percent and few seemed to be of practical significance.

We suspect that the largest differences stem from the fact that mail respondents may have consulted other persons, particularly their children, in trying to arrive at correct answers. Without a followup interview there is no way to determine the extent to which this happened. The telephone interviewers did report, however, that parents sometimes responded to a question by saying that they did not know the answer,

Table 2. Differences in percent of correct mail and telephone responses to 6 factual questions to mothers

Question	Correct answer	Mothers of 4th graders				Mothers of 8th graders			
		Number		Greater percent correct	Percent difference	Number		Greater percent correct	Percent difference
		Telephone	Mail			Telephone	Mail		
Does school test students' vision?	Yes.....	73	61	Telephone..	4.7	68	35	Telephone..	2.5
Does school test students' hearing?	Yes.....	73	61	Mail.....	12.9	68	35	Mail.....	4.8
Does school teach health?	Yes.....	73	61	Telephone..	9.8	68	35	Telephone..	6.9
If above answer is yes, does anyone besides classroom teacher teach health?	Yes.....	71	59	Mail.....	4.0	68	35	Mail.....	17.8
Does school have a nurse?	Yes.....	73	61	do.....	9.6	68	35	Telephone..	2.7
If above answer is yes, is the nurse full time or part time?	Part time..	62	55	Telephone..	1.1	64	32	Mail.....	26.5

Table 3. Parent's and child's interaction with school health program reported in mail and telephone questions to mothers

Question	Mothers of 4th graders				Mothers of 8th graders			
	Number		Greater percent responding "yes"	Percent difference	Number		Greater percent responding "yes"	Percent difference
	Telephone	Mail			Telephone	Mail		
Have you talked to a teacher about child's health?.....	73	61	Telephone..	14.3	68	35	Telephone..	1.7
Have you talked with school's nurse about child's health?.....	73	61	----do----	4.6	68	35	----do----	1.7
Have you talked to anyone about child's health other than nurse or teacher?....	73	61	----do----	2.2	68	35	----do----	9.0
Did school advise you to take child for preschool physical examination?.....	73	61	----do----	27.0	68	35	----do----	8.1
Has school suggested that child be examined by doctor other than preschool?..	73	61	----do----	7.1	68	35	Mail.....	2.6
Has school suggested that child be examined by dentist?.....	73	61	----do----	2.7	68	35	Telephone..	4.4
Has child changed his health habits as result of what he learned in school? ¹	71	59	----do----	13.5	68	35	-----	<1
Has your child's hearing been tested? ²	48	48	Mail.....	24.5	55	30	Mail.....	1.4
Has your child's vision been tested? ²	68	54	Telephone..	2.7	58	29	----do----	6.5
Has school sent home any written material about health?.....	73	61	-----	<1	68	35	----do----	15.9

¹ Only asked of parents who previously reported the school teaches health.
² Only asked of parents who previously reported the school does such tests.

but that they could ask the child, who happened to be nearby. In such cases, the interviewers requested that parents answer strictly on the basis of their own knowledge. An admonition to the same effect was added to the mail questionnaire instructions, but respondents probably did not always comply.

If this is true, a mail questionnaire gives a more accurate picture of what is objectively true, but a telephone interview is a better indicator of what is subjectively true of the current level of knowledge of the respondents.

Another set of factual questions was used to determine whether the data-collection methods differed regarding the reported amount of contact and interaction between respondents and school personnel. Because parents had been randomly assigned to mail and telephone groups, there should not have been any substantial differences in actual interactions between the school personnel and parent or child.

Ten questions involving such interaction were examined. Seven of these questions concerned communications between parent and school; the others consisted of reports on the child's inter-

action with the school health program. In most cases the telephone group responded in a way that indicated more school-parent communications and a more significant impact by the school on the child's health behavior (table 3). Mail responses yielded a greater number of "yes" answers for questions that could be answered by the child. However, four-fifths of the differences were smaller than 15 percent and the practical significance seems slight.

A set of opinion questions was asked to test whether the data-gathering methods differed in the extent to which they showed respondents favorable to the current programs in their community. An examination of responses to these seven questions indicated little difference between the two data-collection methods. In both groups, a large majority of respondents were favorable toward the existing school health program. At the same time, a considerable number in both groups suggested changes to improve the program.

The data-collection methods were compared with respect to the frequency with which questions were not answered or answered with the

response, "don't know" or "uncertain." For this purpose, the questions were divided into three categories. Some questions called for short, simple, answers, requiring simply a "yes" or "no" or a word or two to answer—for example, "Is the nurse in the school full time or part time?" Other questions called for complex and relatively lengthy explanatory answers. For example, one question asked the respondent to explain what kinds of printed health materials had been sent home by the school.

Additional questions could be answered simply, but could lead to a set of complex followup questions if a certain response were given. For example, one question asked whether health subjects should be taught in school. A "yes" answer led to additional opinion questions regarding what specific health subjects should and should not be taught.

With simple factual questions, we expected telephone interviews to yield a higher rate of questions not answered or answered "don't know" than mail questionnaires because mail respondents have more time to think about the question. They also have more opportunity to obtain information from the child or some other source, notwithstanding instructions to the contrary.

Regarding the two other kinds of questions, we hypothesized that mailed questionnaires would yield a higher rate of questions not answered or answered "don't know" than telephone interviews, and that this would be true to a greater extent for opinion items than for factual material. This is based on the assumption that these questions are seen as more difficult, and often more anxiety-arousing, than the simple, factual questions. Skipping the question or answering "don't know" is a means of avoiding bother or anxiety. In addition, we believed mail respondents would feel themselves under less pressure to give a responsive answer. They could look ahead in the interview, discover which short answers would lead into a sequence of more complex questions, and avoid these answers.

The data tend to support these hypotheses, though not with equal strength. The telephone interviews did yield a higher rate of unanswered questions or "don't know" responses for simple factual questions, but only by a small margin.

However, mail questionnaires provided a significantly higher rate of unanswered questions or "don't know" responses on the other types of questions.

These results are consistent with findings from certain other studies. For example, Schmiedeskamp reports that mail questionnaires are less useful than either personal or telephone interviews in getting respondents to reveal definite expectations, intentions, and attitudes (β). In general, respondents are much more likely to avoid taking definite positions in a mail questionnaire than in a telephone interview, although the personal interview is the most satisfactory of all in this respect. These findings, together with those of our study, suggest that certain types of questions cannot be used satisfactorily without personal contact between interviewer and respondent, either face-to-face or over the telephone.

Usefulness of methods. Although this study was not an actual program evaluation, the questions asked would be relevant to program planning and evaluation. Information about current knowledge of a particular service or attitudes toward it can be very useful in planning. If the current status is seen as undesirable and activities are undertaken to change it, subsequent data can be gathered to evaluate the effectiveness of the activities.

There are two criteria of usefulness of any data-gathering method: are the data collected representative and valid? In this study, both methods were effective in gathering data. Non-response bias cannot be very large in the telephone sample because of the very low non-response rate. Those families without telephones were not different in terms of several demographic characteristics from those with telephones, nor were the mail nonrespondents different on the basis of demographic variables, from those who did respond. Therefore, it appears that the data closely represent the total sample population.

Validity of the data is difficult to assess. When items that have face validity are used to measure knowledge or attitudes, two sources of invalidity exist. Items can be misinterpreted by the respondent, and untruthful responses can be given. In this study, both pretesting and the interviewers' experience indicate that the items

were properly interpreted. The most common reason for untruthful answers is generally thought to be social pressure—giving the desired response. This might well be a problem if the agency itself inquired about the value of a service it provided. In this study, however, in which a third entity requested opinion data, this factor should have been reduced if not eliminated. Without some independent criterion measure of the same opinion, however, establishing the validity of a given response is impossible. The best we can do is make subjective judgments about the probability of untruthful answers in a given situation. In this study, the overall impression was that respondents were truthful.

Summary and Conclusions

A study of responses of mothers of fourth graders and mothers of eighth graders provided a comparison of mail and telephone methods of collecting data on a health program. Several differences between the methods were observed, but the generalizability of the findings is not known since the population studied was unusually high in social position.

The telephone method yielded a lower nonresponse rate than the mail questionnaire. Only 2 percent of the sample failed to provide data once they were contacted by telephone. Although the interviews averaged about 15 minutes in length, there was no difficulty in completing them.

A generally low nonresponse rate observed for both methods may be partly because of the nature of the community and the fact that the survey concerned a subject of considerable interest to mothers. Less favorable nonresponse rates might be expected in other settings.

With this relatively lengthy interview, the telephone method was more costly than the mailing because professional staff served as in-

terviewers. However, both methods appear to be considerably less costly than face-to-face interviews. Because the cost of actual data collection with either method is small relative to other costs of the survey, the choice between mail and telephone will usually be based on factors other than cost.

The content of the responses was examined in various ways to discover differences that resulted from the method of data collection. For the most part, the observed differences appeared to be inconsequential.

However, with some types of factual questions, a mail questionnaire seems to elicit more objectively correct answers and fewer nonresponsive answers. If this is because mail respondents have time to do some homework, an administrator might prefer to use a telephone survey if he desired to determine the pre-existing state of knowledge of a population. In addition, some types of complex factual or opinion questions seem to produce more nonresponsive answers in a mail survey than by telephone.

Although some of these findings appear to favor the telephone interview over the mail questionnaire, it should be emphasized that the two methods produced similar results in most respects.

Both data-gathering methods seemed to produce representative and valid data on the study population. Study findings indicate that both the telephone survey and the mail questionnaire can provide the kinds of data needed by an administrator for program evaluation.

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Program Notes

Items for this page: Health departments, health agencies, and others are invited to share their program successes with others by contributing items for brief mention on this page. Flag them for "Program Notes" and address as indicated in masthead.

Tooth Decay Almost Stopped

The U.S. Naval Academy has just about eradicated tooth decay among midshipmen by means of a three-step program.

Each midshipman has his teeth cleaned with a paste containing stannous fluoride. His teeth are then air-dried, and the dentist applies a solution of fluoride. (These procedures take less than 30 minutes.) In the third step, the midshipman is ordered to brush his teeth with fluoridated toothpaste.

The U.S. Army has been using the same preventive dentistry technique since 1960.—*Parade Magazine*, in *Washington (D.C.) Post*, May 14, 1967.

Regulations on Air Pollution

Maryland's first set of regulations governing air pollution became effective June 1, 1967.

The new regulations require that no person shall make any installation, alteration, conversion, or process change capable of discharging any substance directly or indirectly into the air, which may contribute to pollution, without the prior written approval of plans and specifications by the State department of health. The regulations make no attempt to reduce or control present sources of air pollution.

A set of engineering guidelines interpreting the new regulations has been published and distributed.

Help for Adolescents with Diabetes

The University of Wyoming, in cooperation with the Public Health Service, is operating a camp for adolescent boys with diabetes.

One purpose of the camp is to improve "the boy's diabetic outlook and attitude as they relate to his life situation," as well as to improve his condition, and to help the boy learn to live his life on a level with other people.

Other objectives are to demonstrate the value of a wilderness camp experience and to help the boy establish his independence and to realize his potential capabilities.

Information may be obtained from Charles P. Cooper at the University of Wyoming in Laramie.—*Treasure State Health* (State Board of Health, Helena, Mont.), May 1967.

Lead Poisoning at Missile Sites

As Carl Jensen, chief of occupational health, New Mexico Department of Public Health, was passing an area near Roswell, N. Mex., where workmen were dismantling Atlas missile sites, he decided to investigate. He collected blood samples

from the workers and air samples from underground working areas.

These air samples, upon analysis, showed lead six to eight times higher than the threshold for safety. Source of the pollution was a primer coat of lead paint which had been used on the structural steel of the missile silos. When workers used acetylene torches to cut the steel for salvage, lead was released into the atmosphere.

About the time initial results of the blood tests were available, four of the workmen had been hospitalized with what proved to be lead intoxication; another workman was hospitalized a short time later. All ill workers have now recovered.

Albany's Health Guides



Six housewives from Albany, N.Y., have been trained to serve as health guides for their neighbors as part of a pilot study conducted by the State health department to improve health standards among lower socioeconomic groups (see photograph).

Under the theory that people are most influenced by persons they know, housewives from the area to be served were selected to carry the message about health to their neighbors.

These representatives were given a short, intensive briefing about immunization, hygiene, early detection and treatment of disease, and other health subjects. They have been assigned about 50 families living near them to whom they are expected to communicate their knowledge. They will also help people take advantage of various health services.—*New York State Department of Health Weekly Bulletin*, Mar. 6, 1967.

Fish for Mosquito Control

The New Mexico Department of Public Health is conducting an experiment in biological control of mosquitoes with killifish.

Two species of the killifish, known as voracious feeders on mosquito larvae and which lay eggs able to withstand desiccation, are to be introduced to New Mexico waters, beginning in the area around Las Cruces.

The fish reach sexual maturity rapidly, laying their eggs before a pool dries up. Since the eggs are capable of withstanding dry periods, they remain in the soil until the area is flooded again, thence to hatch almost immediately, grow rapidly, and forage on mosquito larvae.

If the project proves successful, it will be extended to other areas of the State, said Bryan Miller, chief of the vector control section, State health department.

Home Health Aides for Oregon

The first class of a new training course for home health aides held in Eugene, Oreg., has received graduation certificates from Lane Community College.

The training is designed to equip the home health aides to perform personal health services under the supervision of a registered professional nurse. Each aide is required to have access to a car for travel from home to home.

The home health aide graduates are expected to relieve personnel shortages in home health agencies, nursing homes, and extended care facilities.

Smoking of School Children

Approximately one of every five students in grades 7-12 is a regular smoker—whether in an urban, rural, parochial, or public school. Young people are beginning to smoke earlier than ever. These results are based on a survey made in 1966 of 23,649 students in 62 Winnebago (Ill.) County schools by a University of Illinois research team.

The eighth grade appears to be the key grade—the one in which a person either becomes an ex-smoker or a regular smoker.

The research team found that 11 percent of the 7th graders in the 62 schools smoked and that the per-

centage increased steadily each year to a high of 30 percent in the 12th grade.

The relationship between parental smoking habits and the child's did not appear to be as strong as earlier studies have indicated. The relationship between the smoking habits of the child and of his friends, however, was significant.

"The Surgeon General's Report on Smoking and Health," released in 1964, was unknown to approximately 50 percent of both the junior and senior high school groups. The warning label on cigarette packages is more widely known and, reportedly, more effective.

Need for Neighborhood Center

A neighborhood health center in Denver, Colo., in its first week of operation showed how greatly it was needed. Planned to serve 450 patients a week, 541 came to it in the opening week, March 7-11, 1966. In March 1967, the weekly total of patients exceeded 1,400.

The center provides emergency medical help but emphasizes the preventive aspects of health care. Staffed by 90 professionals and 71 neighborhood aides, it serves residents of eight census tracts with the lowest income for family size and the highest incidence of disease and disability in Denver.

Before the center opened, people in the neighborhood had only emergency medical care and about one-fourth of them had never even had that emergency help. A survey of those who had never been to Denver General Hospital showed that 75 percent had never been to a dentist and 28 percent had never been to a physician or dentist.

Promoting Infant Immunization

The Maryland State Department of Health recently began a followup program to encourage complete immunizations for all infants born in Maryland counties.

Following the routine birth registration notice, parents of newborn infants receive a letter from the department urging that the baby be taken to a physician or health clinic for the required immunization series.

Each letter contains a card on which the parents are to indicate the baby's age and the date when the immunization series was begun. The postage-paid card is to be mailed back to the department. When par-

ents report that the basic series has been completed, they will be sent a permanent immunization record card for the child.

Registry for Stroke Victims

A hemiplegia registry service for the benefit of stroke victims has been established at the Grasslands Hospital in Valhalla, Westchester County, N.Y. The registry is a joint project of the county and the State.

Once the acute phase of paralytic stroke is over and the initial rehabilitation has been completed, the patient's name is placed on a roster of persons with residual handicaps such as hemiplegia. The registry will facilitate periodic checks of such patients to insure that they are maintaining their improvement and not regressing.

By keeping track of patients through the registry, more effective use of the various medical and therapeutic services available in the State will be possible.

Farm Machine Accidents

"Too many farmers sustain injuries while operating power-takeoff drives from their tractors," says Dr. Richard E. Marland, chief of the Public Health Service's Injury Control Program.

These tractor attachments enable tractor power to be used to operate such farm machines as feed grinders and blowers.

Accidents from the power takeoff drive often occurred when operators removed, and did not replace, shielding over the drives. Thus, the operator's clothing became entangled in the spinning drives, with amputation of limbs or even death resulting.

"Many of the fatalities and injuries would not occur," Marland concluded, "if shielding for the drive were developed which offered a greater protection to the operator and could not be removed."

Two studies supported by the Injury Control Program were conducted in rural Iowa through the University of Iowa's Institute of Agricultural Medicine. In one study, 140 physicians and 100 county extension directors were personally queried about farm injuries and their individual causes.



Federal Publications

How Safe are Motel Pools? *By Daniel P. Webster. Reprinted with permission by the U.S. Department of Health, Education, and Welfare, Public Health Service from Family Safety, Vol. 25, No. 2, summer 1966 (a publication of the National Safety Council).* Points out various kinds of hotel or motel pool accidents. Suggests safety features, such as protective barriers and locks, that users should look for as safety measures. Stresses parental responsibility and supervision for maximum safety for children. Also points out rules for good pool conduct and the teaching of basic rudiments of swimming.

Public Health Service Grants and Awards, Fiscal Year 1966 Funds. *PHS Publication No. 1564; Part II; 1966; 494 pages; \$1.25.* This part of an annual five-part series gives a detailed accounting, by State and institution, of the fiscal year 1966 awards for advanced training in the medical and biological sciences. Part I lists all grants by the Public Health Service for research projects; Part III lists grants for construction of research and hospital and related health research facilities; Part IV, all formula and project grants for health services; and Part V presents summary tables covering data in Parts I through IV.

Research Grants Index. *PHS Publication No. 925; 1966; 2,283 pages (2 vols.); \$12.75.* Contains summaries of research projects conducted by approximately 16,500 scientists in biomedical and health-related research supported by the Public Health Service during fiscal year 1966. Helps to eliminate duplication of effort and facilitates cooperation and coordination of research among scientists and administrators of scientific programs. Volume I lists grants and contracts

under 7,500 single or compound subject headings representing specific segments of research problems currently being studied by PHS grantees. Volume II contains three appendixes. Appendix I lists the grants by number with citations to resulting publications; appendix II lists grants by scientific areas; and appendix III lists grantee investigators alphabetically.

Immunization Information for International Travel, 1967-68. *PHS Publication No. 384; revised 1967; 104 pages; 35 cents.* Contains information on immunizations and vaccination documents for international travel, yellow fever vaccination centers, yellow fever endemic maps, yellow fever receptive area map, *Aedes aegypti* eradication campaign map, and malaria maps.

Film Reference Guide for Medicine and Allied Sciences. *PHS Publication No. 487; revised 1967; 379 pages; \$2.25.* Includes entries for selected medical films and filmstrips that are useful in the medical training programs of one or more of the member agencies that comprise the Federal Advisory Council on Medical Training Aids. Provides film descriptions, arranged by subject with a title index, and a category listing. Lists materials which are currently available for borrowing or renting; no films listed are for sale only. (Members include the Department of the Army, Department of the Navy, Department of the Air Force, the Veterans Administration, and the Public Health Service.)

The Role of the Licensed Practical Nurse in National Disaster. *PHS Publication No. 1071-I-6; 1967; 12 pages; 15 cents.* Presents the role of the licensed practical nurse in natural and war-caused disaster. Compares the functions a practical

nurse is expected to assume in disaster situations with the "Statement of Functions of the Licensed Practical Nurses," prepared by the American Nurses' Association and the National Federation of Licensed Practical Nurses. Points out the extension of activities from a normal peacetime situation to a major disaster situation. The booklet was prepared to orient and motivate licensed practical nurses to their role in disaster preparedness and to form a basis for developing disaster preparedness programs for the profession. It will be of interest to all members of the nursing profession, including student nurses, and will acquaint them with the coordination of functions demanded by a disaster situation. It was originally published by the American Nurses' Association and the National Federation of Licensed Practical Nurses under the title of "The Role of the Licensed Practical Nurse in Disaster."

Environmental Aspects of the Hospital. Vol. 1. Infection control. *PHS Publication No. 930-C-15; December 1966; 67 pages; 45 cents.* Outlines the history and present status of the hospital as a community health center and as a clinical setting. Reviews principles of bacteriology and epidemiology. Discusses infection control procedures including sterilization and decontamination. This publication is the first of a series devoted to guidelines for developing environmental control programs in the hospital.

This section carries announcements of new publications prepared by the Public Health Service and of selected publications prepared with Federal support.

Unless otherwise indicated, publications for which prices are quoted are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402. Orders should be accompanied by cash, check, or money order and should fully identify the publication. Public Health Service publications which do not carry price quotations, as well as single sample copies of those for which prices are shown, can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington, D.C. 20201.

The Public Health Service does not supply publications other than its own.

DANDOY, SUZANNE (University of California School of Medicine and School of Public Health, Los Angeles): *Measles epidemiology and vaccine use in Los Angeles County, 1963 and 1966. Public Health Reports, Vol. 82, August 1967, pp. 659-666.*

To determine if use of measles vaccines had altered the epidemiologic characteristics of measles cases, 4,685 of the reported cases in Los Angeles County for 1963 were compared with 5,427 of the cases for 1966. A mass immunization campaign in April 1966 apparently caused a

more rapid decline in the epidemic curve compared with the 1963 curve and also caused an increase in the mean age of patients whose cases were reported subsequently.

In 1966, measles in Los Angeles County became a disease of the Negro population and the population

with Spanish surnames; an accompanying increase occurred in the percent of cases among preschool children. In the past, measles vaccines had been distributed unequally in the county, being used primarily by private physicians. If this disease is to be controlled in the United States, measles immunization must be made available to all segments of the population irrespective of their economic status or source of medical care.

QUINN, R. W. (Vanderbilt University School of Medicine), **DOWNEY, F. M.**, and **FEDERSPIEL, C. F.**: *The incidence of rheumatic fever in Metropolitan Nashville, 1963-65. Public Health Reports, Vol. 82, August 1967, pp. 673-682.*

In a survey of the incidence of rheumatic fever in Metropolitan Nashville, Tenn., during the period 1963-65, three times as many cases of illness were found by the study methods as were reported by the official health agency.

The average annual incidence of rheumatic fever in Nashville during that period was 12.6 cases per 100,000 population. There was no significant difference in the rate for any of the

3 years, but the seasonal incidence was highest in the winter and spring months.

The incidence of rheumatic fever was nearly twice as high among non-white as among white persons. No significant differences in incidence were noted between the sexes; age-specific rates were highest in the age group 10-14 years.

Four persons had both initial attacks and recurrences. Among all

cases, 79.7 percent had initial attacks and 18.3 percent had recurrences. Patients with initial attacks were, on the average, 6 years younger than those with recurrent attacks.

The Jones criteria for the diagnosis of rheumatic fever were satisfied by 70 percent of the cases. Clinical evidence of carditis was present in more than 40 percent of initial and recurrent attacks. It was present in 37 percent of those patients under age 20 and in 43 percent of those age 20 and over.

Despite the availability of effective prophylaxis, recurrent attacks of rheumatic fever continued to occur.

HANCHETT, EFFIE (St. Luke's Hospital Center, New York City), and **TORRENS, PAUL R.**: *A public health home nursing program for out-patients with heart diseases. Public Health Reports, Vol. 82, August 1967, pp. 683-688.*

A 2½-year study was conducted at St. Luke's Hospital Center in New York City to determine if the rate of admission to the hospital for congestive heart failure could be reduced by adding anticipatory public health nursing followup to the outpatient clinic routine.

The addition of this nursing followup was accompanied by a reduction in the rate of admission to the

hospital for congestive heart failure for the 126 study group patients as compared to the rate of admission of the 113 control group patients.

The primary nursing need for the patients receiving public health nursing followup was for educational and motivational activities aimed at improving patient adherence to treatment regimens; the next most common nursing need was for simple

supportive measures of reassurance and occasional referral for assistance with social problems. The majority of the nurses' time and energies were spent in teaching and motivational activities rather than in the provision of bedside nursing care as in a more traditional program for patients after hospitalization.

The anticipatory home care program based in a community hospital has great potential, both for improving the health status of patients with chronic illness and for bringing the hospital closer to its community.

WALDER, RAUL (Yale University School of Medicine), and **HSIUNG, G. D.**: *Biological and antigenic characteristics of an A2 influenza virus isolated in 1965. New Haven study. Public Health Reports, Vol. 82, August 1967, pp. 689-696.*

During the winter months of 1964 to 1965, an epidemic of influenza occurred in the area of New Haven, Conn. A total of 93 single and 75 paired blood specimens were collected from 168 members of the Yale Medical School staff and students. The virus responsible for the out-

break belonged to the A2 type of influenza virus but was found to differ antigenically from the A2 strains isolated in earlier years.

Roosters, ferrets, hamsters, and monkeys were used for immunization. Antiserums produced by older A2 strains inhibited the new isolate

in both hemagglutination-inhibition and neutralization tests, but serums produced in animals with the A2/65 virus proved to be poor inhibitors of the older virus strains. This observation was demonstrated most clearly in serums obtained from monkeys immunized with the A2/65 virus. The A2/65 virus produced distinct plaques under agar medium, and the plaque-reduction neutralization method was found to be useful for the study of the antigenic properties of A2 influenza viruses.

ALPERT, JOEL J. (Harvard Medical School), **KOSA, JOHN**, and **HAGGERTY, ROBERT J.**: *A month of illness and health care among low-income families. Public Health Reports, Vol. 82, August 1967, pp. 705-713.*

During a summer period when a family health sample of 78 low-income urban families kept family health calendars, illnesses caused numerous interruptions in family life—on 1 of every 3 days. For only one of every eight symptoms, did the person receive medical care; the rest escaped medical attention.

The families recorded few upsetting events. Presumably, many such events were left unrecorded; per-

haps they were not even perceived. The emotional aspects of events and problems were in no instance brought to medical attention. A pattern of association, however, emerged among symptoms, upsetting events, and crises, indicating certain clusters of illness among the families. A three-fold typology of the families could be delineated in which each type was distinguished by the frequency of symptoms and upsetting events the

families experienced, by the responses they made to such symptoms and events, and by the frequency of use of medical facilities. The frequency of symptoms and upsetting events, as well as the typology of families, was associated with the social and psychological characteristics of the families.

On the basis of illnesses and health-related behavior, the family may be regarded as a meaningful unit which shows specific characteristics in maintaining health and in preventing, experiencing, and treating illness.

MAYNARD, JAMES E. (Arctic Health Research Laboratory, Public Health Service), **HAMMES, LAUREL M.**, and **KESTER, FRANCIS E.**: *Mortality due to heart disease among Alaskan Natives, 1955-65. Public Health Reports, Vol. 82, August 1967, pp. 714-720.*

The 378 deaths among Alaskan Aleuts, Eskimos, and Indians aged 40 years and over due to diseases of the heart (ICD codes 410-443) for the period 1955-65 were analyzed regarding certification status, sex, geographic area, and ethnic classification. Mortality rate comparisons were made both in relation to the overall U.S. rates for 1960 and to geographic area and ethnic designations within the State. Although non-

medical certifications accounted for 36 percent of the total death certifications for nonviolent deaths reviewed, they did not influence rate calculations or mortality comparison by area for the codes 410-443 as a whole.

Alaska Native mortality rates for diseases of the heart per 1,000 populations were 2.4 for males 40-64 years of age, 15.8 for males 65 years and over, 1.4 for females 40-64, and 14.7

for females 65 and over. For the U.S. population, corresponding rates were 5.6 and 33.1 for males and 2.1 and 24.2 for females. Statistically significant differences in rates by race and geographic area within the State were observed. Lowest rates occurred in the southwestern and northern regions of the State among Eskimos, while the highest rates were found in the southcentral, southeastern, and Aleutian Chain, Kodiak, and Pribilof areas among Aleuts and Indians. Determination of the reasons for these differences must await further epidemiologic and clinical investigation.

KLARMAN, HERBERT E. (Johns Hopkins University): *Economic factors in hospital planning in urban areas. Public Health Reports, Vol. 82, August 1967, pp. 721-728.*

Economic intervention by Government can take many forms. Planning is one of them. In recent years the Federal Government has supported the large-scale expansion of areawide hospital planning agencies in this country.

The original basis for areawide hospital planning in the 1930's was recognition that overhead cost constitutes a high proportion of total hospital cost. It follows that a low rate of bed occupancy reduces income much more than expenditures do and that large numbers of vacant beds threaten the financial stability of hospitals.

Avoidance of duplication among hospitals of expensive facilities and services requires recognition of the importance of selective duplication of staff appointments for physicians. (Through selective duplication of appointments, facilities located in only a small number of hospitals can be made available to physicians on staffs of other hospitals who need to use them.)

In a number of instances, possible conflicts of interest are noted between the individual hospital and the community. Under these circumstances, voluntary cooperation may not be forthcoming. Perhaps the out-

standing example of such conflict is the possibility that additional hospital beds will tend to be used whenever third-party financing of hospital care is predominant.

If the increase in hospital unit cost is largely attributable to productivity gains in the hospital lagging behind the rest of the economy, primary reliance in controlling hospital care expenditures must be placed on the control of hospital use. A firm No to hospital building plans may be required.

The prospects for accurate forecasting of hospital use in a given local area are not bright. Planning should therefore concentrate on developing devices that will permit flexible use of facilities.

LEMON, GENELLE M. (Contra Costa County, Calif., Health Department), and WELCHES, LOIS: *Survey of welfare clients to determine need for home health aides. Public Health Reports, Vol. 82, August 1967, pp. 729-734.*

To comply with Federal and State medical care legislation, the Contra Costa County Health Department had to determine the need for home health aides among welfare recipients. An estimate of the services required was derived by reviewing the social service case records of all clients receiving attendant services in September 1966. Validity of this method was confirmed when public health nurses made home visits to assess the needs of a subsample of the patients whose records were surveyed and concurred with 35 of 40 evaluations.

From a total of 821 patients, attendant care clearly was necessary for 715. Of these, 63.9 percent apparently required primarily domestic services which are not covered by the medical assistance program. Home health aide services will be needed by 36.1 percent of these patients when the medical assistance program is implemented if the county is to be saved the expense of providing personal care services for those needy persons who would qualify for such services under the California Medical Assistance Act.

More than two-thirds of the pa-

tients had multiple conditions involving several physiological systems. Of the 259 patients requiring personal services, 31 percent were seriously disabled and needed care for 24 hours each day, 26 percent needed service approximately 6 to 8 hours daily, and the remaining 43 percent apparently required help for 4 hours or less a day. A family member was being paid for personal care for one-third of the patients.

In many cases the domestic attendant apparently was expected to watch over the patient. Frequent assessments of the mental alertness and functional levels of older people in their homes will be needed to prevent accidents, promote rehabilitation, and maintain maximum health potentials in the home as long as possible.